Appendix B
(complete set of pending claims)

2.   A computer implemented simulation and evaluation method according to claim 40, further comprising the steps of:

(g)   evolving the patient to a predetermined health state responsive to the at least one intervention, the genetic information and the patient history to at least one subsequent health state; and

(h)   evaluating the user responsive to the at least one intervention input by the user, the at least one subsequent health state, and the predetermined criteria.

3.   A computer implemented simulation and evaluation method according to claim 40, further comprising the steps of:

(g)   evolving the patient to a predetermined health state responsive to the at least one intervention, the genetic information and the patient history to at least one subsequent health state; and

(h)   receiving at least one other intervention input by the user; and

(i)   evaluating the user responsive to at least one of the at least one intervention input by the user, the at least one other intervention input by the user, the at least one subsequent health state, and the predetermined criteria.

4.   A computer implemented simulation and evaluation method according to claim 40, further comprising the steps of:

(g)   evolving the patient to a predetermined health state responsive to the at least one intervention, the genetic information and the patient history to at least one subsequent health state;

(h)   receiving at least one other intervention input by the user;

(i)   evolving the patient responsive to the at least one intervention, the genetic information and the patient history to at least one other subsequent health state; and

(j)   evaluating the user responsive to at least one of the at least one intervention input by the user, the at least one subsequent health state, the at least one other subsequent health state, and the predetermined criteria.

5.   A computer implemented simulation and evaluation method according to claim 40, wherein said generating step (d) further comprises the step of generating the patient history responsive to the test area, the genetic information, and an entity relationship model.

6.   A computer implemented simulation and evaluation method according to claim 5, wherein the entity relationship model comprises population, record, agents of change, health states, findings and courses of action.

7.   A computer implemented simulation and evaluation method according to claim 6, wherein the findings include specific findings, patterns and sub-patterns describing patient behaviors and characteristics.

8.   A computer implemented simulation and evaluation method according to claim 7, wherein the patterns describe one or more features over time.

9.   A computer implemented simulation and evaluation method according to claim 7, wherein the sub-patterns describe consequences of patient related events.

10.   A computer implemented simulation and evaluation method according to claim 7, wherein the patterns model time and characterize interrelated medical observations.

11.   A computer implemented simulation and evaluation method according to claim 7, further comprising the step of performing a differential diagnosis responsive to the findings, the patterns and the sub-patterns.

12.   A computer implemented simulation and evaluation method according to claim 7, wherein confidence in a presence of the patterns increases with passage of time.

13.   A computer implemented simulation and evaluation method according to claim 6, wherein the courses of action describe tasks and methods used to apply, modify, and evaluation health state information and characteristics described in the entity relationship model.

14.   A computer implemented simulation and evaluation method according to claim 6, wherein the courses of action describe patient activities, including at least one of medical and non-medical activities.

15.   A computer implemented simulation and evaluation method according to claim 6, wherein the courses of action describe potential interventions input by the user including at least one of diagnostic and management strategies.

16.   A computer implemented simulation and evaluation method according to claim 6, wherein the courses of action comprise one or more elementary courses of action used in to construct at least one course of action, one or more types of elementary courses of action corresponding to the one or more elementary course of action, and weighting factors corresponding to the one or more elementary courses of action.

17.   A computer implemented simulation and evaluation method according to claim 5, wherein the entity relationship model includes entity relations.

18.   A computer implemented simulation and evaluation method according to claim 17, further comprising the step of evolving the patient responsive to the at least one intervention, the genetic information, the entity relations and the patient history to at least one subsequent health state.

19.   A computer implemented simulation and evaluation method according to claim 5, wherein the entity relationship model includes a health states leads to health states relation describing patient evolution.

20.   A computer implemented simulation and evaluation method according to claim 5, wherein the entity relationship model includes one or more of the following relations between entities:

Population Contacts Population

Population Related to Population

Population Interacts with Courses of Action

Population Exposed to Agents of Change

Population Has Health States

Population Exhibits Findings

Agents of Change Cause Health States

Health States Lead to Health States

Findings Associated with Health States

Findings Link to Findings

Course of Action use Agents of Change

Courses of Action Identify Agents of Change

Courses of Action Treat Health States

Courses of Action Alter Findings

Courses of Action Reveal Findings

Courses of Action Evaluation Findings.

21.   A computer implemented simulation and evaluation method according to claim 6, wherein the entity relationship model links the findings with the patterns to a health state, rather than linking a range of finding values to the health state.

22.   A computer implemented simulation and evaluation method according to claim 6, wherein the patterns include sensitivity and specificity represented as age dependent, rather than as constants.

23.   A computer implemented simulation and evaluation method according to claim 40, wherein said generating patient history step (d) is executed once for each simulation to generate the patient history used in said computer implemented simulation and evaluation method.

24.   A computer implemented simulation and evaluation method according to claim 2, further compromising the step of repeating said evolving step (g), and said receiving step (h) a plurality of times.

25.   A computer implemented simulation and evaluation method according to claim 40, wherein said generating step (d) generates the patient history comprising a progression of health states and risk factors traversed by the patient from a normal health condition to a specified health condition.

26.   A computer implemented simulation and evaluation method according to claim 40, wherein said generating step (d) iteratively generates the patient history backwards in time from a specified health condition to a normal health condition including successive precursor health states and onset times therebetween.

27.   A computer implemented simulation and evaluation method according to claim 40, wherein said generating step (d) generates the patient history using a Monte Carlo process to multiple stochastic trees to generate a plurality of potential patient histories to be used in said computer implemented simulation and evaluation method.

28.   A computer implemented simulation and evaluation method according to claim 5, wherein the entity relationship model utilizes tree structures to describe a probability density function conditioned on comorbidities, treatments, risk factors, and the interventions.

29.   A computer implemented simulation and evaluation method according to claim 5, wherein the entity relationship model includes diagnostic complexities and disease interaction.

30.   A computer implemented simulation and evaluation method according to claim 5, wherein the entity relationship model includes parallel networks of health states to avoid combinatoric health state explosion.

31.   A computer implemented simulation and evaluation method according to claim 30, wherein the parallel networks of health states describe at least one of a chronic condition and non-chronic condition.

32.   A computer implemented simulation and evaluation method according to claim 30, wherein the non-chronic condition includes acute exacerbations describing acute flares of illness that occur during a more chronic health condition.

33.   A computer implemented simulation and evaluation method according to claim 30, wherein the parallel networks of health states form at least one of the following interactions:

(1)   independent interaction between parallel networks so that patient evolution between first and second parallel networks are unrelated to each other;

(2)   unilateral interaction between the parallel networks so that patient evolution on a first parallel network is unrelated to the patient evolution on a second parallel network, and patient evolution on the second parallel network is related to the patient evolution on the first parallel network; and

(3)   mutually dependent interaction between the parallel networks so that patient evolution between the first and second parallel networks are related to each other.

34.   A computer implemented simulation and evaluation method according to claim 2, further comprising the step of repeating said evolving step (g) to the at least one subsequent health state is responsive to:

(1)   parallel health states of the patient; and

(2)   a target health state and health state combinations that leas to different parallel states.

35.   A computer implemented simulation and evaluation method according to claim 30, wherein the parallel networks of health states comprise:

(1)   a primary network including primary health conditions defining a health domain;

(2)   a risk factor network including risk factors for progression through the primary network; and

(3)   complications attributed to treating the primary health conditions in the primary network.

36.   A computer implemented simulation and evaluation method according to claim 35, wherein the parallel networks of health states are generated using the following information:

(1)   how long at least one of the risk factors exists before influencing a transition
        between primary health conditions in the primary network;

(2)   time required for transitions in the primary network, considering different
        combinations of the risk factors; and

(3)   number of transitions the patient is allowed to make between a specified health
        state and a normal health state.

        37.   A computer simulation and evaluation system for simulating interventions
including active and passive intervention to a patient having a health state by a user, and for
evaluating the interventions responsive to predetermined criteria and the interventions,
comprising:

        a knowledge database storing patient health characteristics including at least one
of population, record, agents of change, health states, findings and courses of action;

        a presentation system providing access to the computer simulation and evaluation
system by the user; and

        a patient simulation system adapted to be connectable to said presentation system
and said knowledge database, said patient simulation system performing the functions:

(a)   accessing a profile for said user;

(b)   defining a test area in response to said profile and selecting genetic
        information of the patient responsive to the test area and the knowledge
        database;

(c)   generating a patient history responsive to the test area and the genetic
        information, wherein said patient history is selected from predetermined
        health states;

(d)   receiving at least one intervention input by the user; and

(e)   evaluating the user responsive to the at least one intervention input by the
        user and the predetermined criteria.

        38.   A computer readable tangible medium storing instructions for implementing a
process driven by a computer, the process simulating interventions initiated by a user, the
interventions including active and passive interventions to a patient having a health state, and the
process evaluating the interventions responsive to predetermined criteria and the interventions,
the instructions comprising the steps of:

(a)   accessing the computer implemented simulation and evaluation method by the user;

(b)   accessing a profile for said user;

(c)   defining a test area to evaluate the user by the computer implemented simulation and evaluation method responsive to at least one of predetermined criteria and a user profile;

(d)   selecting genetic information of the patient responsive to the test area;

(e)   generating a predetermined patient history responsive to the test area and the genetic information;

(f)   receiving at least one intervention input by the user; and

(g)   evaluating the user responsive to the at least one intervention input by the user and the predetermined criteria.

39.   A computer implemented simulation and evaluation method simulates interventions to a patient by a user, and evaluates the interventions responsive to predetermined criteria and the intervention, said method comprising the steps of accessing a profile for said user, defining a test area to evaluate the user responsive to at least one of predetermined criteria and a user profile, selecting genetic information of the patient responsive to the test area, generating a predetermined patient history responsive to the test area and the genetic information, receiving at least one intervention input by the user, and evaluating the user responsive to the at least one intervention and the predetermined criteria.

40.   A computer implemented simulation and evaluation method for testing a user's problem solving abilities in response to a complex system, said method comprising the steps of:

(a)   accessing a profile for said user;

(b)   selecting a testing area to evaluate said user on at least one predetermined criterion responsive to said profile;

(c)   selecting epidemiological information including at least one of genetic information and environmental information of a patient responsive to said testing area;

(d)   generating a patient history responsive to said testing area and said epidemiological information including said at least one of genetic information and environmental information, wherein said patient history comprises a predetermined set of health states;

(e)   receiving at least one intervention input by the user, wherein said at least one intervention includes passive and active interventions; and

(f)   evaluating said user responsive to said at least one predetermined criteria and said at least one intervention.

41.   A computer implemented simulation and evaluation method for testing a user's problem solving abilities in response to a complex system, said method comprising the steps of:

(a)   generating an initial patient history state, wherein said initial patient history state comprises a predetermined set of health states;

(b)   receiving at least one intervention input by said user, wherein said at least one intervention includes passive and active interventions;

(c)   evolving the initial patient history state to a predetermined subsequent patient history health state responsive to said at least one intervention; and

(d)   evaluating said user responsive to said at least one intervention.

42.   The method according to claim 41, wherein evolving the initial patient history state to said predetermined subsequent patient history state occurs over a finite stochastically determined time period.

43.   The method according to claim 41, further comprising the step of repeating said evolving step and receiving step a plurality of times.

44.   A computer implemented method for training a user regarding the operation of a complex system, said method comprising the steps of:

(a)   generating an initial patient history state, wherein said initial patient history state comprises a predetermined set of health states; and

(b)   iterating through a prescribed treatment protocol with said user, wherein said iterating step comprises evolving, through at least one intermediate health state, the initial patient history state forward in time to a predetermined subsequent patient history health state.

45.   A computer implemented method for simulating a complex system, such as a patient having at least one predetermined health state such method comprising the steps of:

(a)   generating an initial patient history state, wherein said initial patient history state comprises a predetermined set of health states;

(b)   evolving, through at least one intermediate health state, the initial patient history state to a predetermined subsequent patient history health state; and

(c)   observing a full fidelity model of a patient having at least one predetermined health state so as to extract user inputs and patient responses at each said evolving step.

46.   A computer implemented simulation and evaluation method for testing a user's problem solving abilities in response to a complex system said method comprises the steps of:

(a)   generating multiple instances of patients representing a clinical scenario, wherein each instance of a patient has an initial patient history state comprising a predetermined set of health states;

(b)   evolving at least one of each instance of said patient's initial patient history state to a predetermined subsequent patient history health state;

(c)   receiving at least one intervention input by said user, wherein said at least one intervention includes passive and active interventions; and

(d)   evaluating said user responsive to said at least one intervention.

47.   A computer implemented method for evaluating a user's response to a simulated patient, said method comprising:

selecting subject matter on which to evaluate a user;

generating a first target health state of a patient, wherein said first target health state is determined by said subject matter;

generating a medical history for said patient, wherein generating said medical history comprises iterating from said first target health state backward in time through at least one precursor health state to an initial health state;

receiving at least one query including at least one of an intervention and a request for additional information regarding the patient from said user in response to said first target health state;

evolving said first target health state forward in time in response to said at least one query to a second target health state; and

evaluating said user based on said at least one query.

48.   A computer implemented method for evaluating a user's response to a simulated patient, said method comprising the steps of:

accessing a user profile;

selecting subject matter on which to evaluate said user, wherein said subject matter is determined by said user profile;

generating a first target health state of a simulated patient, wherein said first target health state is determined by said user profile;

generating a medical history for said simulated patient;

presenting said simulated patient to said user;

receiving at least one query including at least one of an intervention and a request for additional information regarding the patient from said user in response to said first target health state;

evolving said first target health state forward in time in response to said at least one query to a second target health state; and

evaluating said user based on said at least one query.

49.   A computer implemented method for evaluating the problem solving skills of a plurality of users comprising:

selecting subject matter on which to evaluate a plurality of users;

generating a first target health state of a patient, wherein said first target health state is determined by said subject matter;

generating a medical history for said patient;

presenting to each user of said plurality of users a copy of said patient, wherein said patient comprises said first target health state and said medical history;

receiving at least one query including at least one of an intervention and a request for additional information regarding the patient from each user of said plurality of users in response to each user's copy of said patient;

evolving said first target health state of each copy of said patient forward in time independent of other copies of said patient presented to other users in response to said at least one query from each said user to a second target health state; and

evaluating said plurality of users based each user's said at least one query.

50.   A method for surveying physician treatment responses to patient care for establishing a standard for a minimum level of patient care, said method comprising:

selecting subject matter on which to collect responses from a user;

generating a first target health state of a patient, wherein said first target health state is determined by said subject matter;

generating a medical history for said patient, wherein generating said medical history comprises iterating from said first target health state backward in time through at least one precursor health state from the first target health state to an initial health state;

receiving at least one query including at least one of an intervention and a request for additional information regarding the patient from each user of said plurality of users in response to said first target health state;

evolving said first target health state forward in time in response to said at least one query to a second target health state;

determining a standard for the minimum level of patient care from at least one query form each user of a plurality of users.

51.   A computer implemented method for training a user on patient treatment practices through the use of patient simulation, said method comprising:

selecting subject matter on which to train the user;

generating a first target health state of a patient, wherein said first target health state is determined by said subject matter;

generating a medical history of said patient; and

iterating through at least one subsequent target health state in response to at least one query said patient to a final target health state, wherein said iterating comprises:

(a)   prompting a user to enter at least one predetermined query;

(b)   evolving said first target health state forward in time in response to said at least one predetermined query including at least one of an intervention and a request for additional information regarding the patient to a second target health state; and

(c) repeating (a) and (b) until treatment of said patient is completed.

52.   A computer simulated method for evaluating the problem solving skills of a user, said method comprising:

selecting subject matter on which to evaluate said user;

generating a first problem environment, wherein said first problem environment is determined by said subject matter;

generating a history of said first problem environment, wherein generating said first problem environment comprises iterating from said first situation backward in time through at least one precursor situation to an initial situation;

receiving at least one query including at least one of an intervention and a request for additional information from said user in response to said first problem environment;

evolving said first problem environment forward in time in response to said at least one query to a second problem environment; and

evaluating said user based on said at least one query.